

# THE ASTROPHYSICAL JOURNAL

## INDEX TO VOLUME 321, PARTS 1 AND 2

1987 OCTOBER 1 AND OCTOBER 15

- ABT, HELMUT A. Editorial: Subscription Rate Increases. *Helmuth A. Abt.* **321**, 1, 122-A7 (1987)
- ALLER, L. H. A Spectroscopic Survey of 51 Planetary Nebulae (Abstract of Paper in 1987 November Suppl.). *L. H. Aller and C. D. Keyes.* **321**, 1051, 136-A2 (1987)
- ALTAMORE, A. A Detailed Study of the C IV  $\lambda 1550$  Line Profile and Adjacent Spectral Features in NGC 4151 from 1978 to 1983. *J. Clavel, A. Altamore, A. Boksenberg, G. E. Bromage, A. Elvius, D. Pelat, M. V. Penston, G. C. Perola, M. A. J. Snijders, and M. H. Ulrich.* **321**, 251, 125-A5 (1987)
- ANDERSON, E. Forbidden Line and H $\alpha$  Profiles in T Tauri Star Spectra: A Probe of Anisotropic Mass Outflows and Circumstellar Disks. *Suzan Edwards, Sylvie Cabrit, Stephen E. Strom, Ingeborg Heyer, Karen M. Strom, and E. Anderson.* **321**, 473, 127-C10 (1987)
- ANGERHOFER, P. E. Daily Observations of Compact Extragalactic Radio Sources at 2695 and 8085 MHz, 1979-1985 (Abstract of Paper in 1987 November Suppl.). *R. L. Fiedler, E. B. Waltman, J. H. Spencer, K. J. Johnston, P. E. Angerhofer, D. R. Florkowski, F. J. Josties, W. J. Klepczynski, D. D. McCarthy, and D. N. Matsakis.* **321**, 1050, 136-A1 (1987)
- ANGLADA, G. Are the High-Velocity Molecular Flows Really Clumpy? *J. Cantó, L. F. Rodríguez, and G. Anglada.* **321**, 877, 134-E8 (1987)
- ARONS, JONATHAN. Fluctuation of Wind-driven Accretion in X-Ray Binaries. *Cheng Ho and Jonathan Arons.* **321**, 404, 126-E11 (1987)
- BAAN, W. A. The Megamaser Galaxy Markarian 273. I. VLA Observations of the Hydroxyl Emission. *J. T. Schmelz, W. A. Baan, and A. D. Haschick.* **321**, 225, 124-F6 (1987)
- BAGGETT, W. E. The Activity, Variability, and Rotation of Lower Main-Sequence Hyades Stars. *Richard R. Radick, D. T. Thompson, G. W. Lockwood, D. K. Duncan, and W. E. Baggett.* **321**, 459, 127-B10 (1987)
- BALL, R. Giant Molecular Clouds in M31. *S. N. Vogel, F. Boulanger, and R. Ball.* **321**, L145, 137-D8 (1987)
- BALLY, JOHN. Detection of Interstellar PN: The First Identified Phosphorus Compound in the Interstellar Medium. *B. E. Turner and John Bally.* **321**, L75, 129-G11 (1987)
- BAND, DAVID L. On Nonthermal Models for Active Galactic Nuclei. *David L. Band.* **321**, 80, 123-A9 (1987)
- BARBOSA, D. D. Planetary Fast Neutral Emission and Effects on the Solar Wind: A Cometary Exosphere Analog: Erratum. *D. D. Barbosa and A. Eviatar.* **321**, 1049, 135-G14 (1987) (Orig. paper in **310**, 927, 144-B10)
- BARDEEN, J. M. Cosmic Fluctuation Spectra with Large-Scale Power. *J. M. Bardeen, J. R. Bond, and G. Efstathiou.* **321**, 28, 122-D1 (1987)
- BARON, E. Neutrino Pair Energy Deposition in Supernovae. *J. Cooperstein, L. J. van den Horn, and E. Baron.* **321**, L129, 137-C7 (1987)
- BATES, DAVID R. Ion-Dipolar Molecule Rate Coefficients: Erratum. *Wm. Lowell Morgan and David R. Bates.* **321**, 1049, 135-G14 (1987) (Orig. paper in **314**, 817, 38-E3)
- BENNETT, C. L. The Triple Radio Source 0023 + 171: A Candidate for a Dark Gravitational Lens. *J. N. Hewitt, E. L. Turner, C. R. Lawrence, D. P. Schneider, J. E. Gunn, C. L. Bennett, B. F. Burke, J. H. Mahoney, G. I. Langston, M. Schmidt, J. B. Oke, and J. G. Hoessel.* **321**, 706, 132-C5 (1987)
- BICAY, MICHAEL D. Far-Infrared Properties of Cluster Galaxies. *Michael D. Bica and Riccardo Giovanelli.* **321**, 645, 131-E11 (1987)
- BLANDFORD, ROGER D. Gravitational Imaging by Isolated Elliptical Potential Wells. I. Cross Sections. *Roger D. Blandford and Christopher S. Kochanek.* **321**, 658, 131-F1 (1987)
- Gravitational Imaging by Isolated Elliptical Potential Wells. II. Probability Distributions. *Christopher S. Kochanek and Roger D. Blandford.* **321**, 676, 132-A3 (1987)
- BOESGAARD, ANN MERCHANT. Lithium in the Coma Cluster. *Ann Merchant Boesgaard.* **321**, 967, 135-B2 (1987)
- BOHLIN, R. C. The Unusual Dust-scattering Properties in the Reflection Nebula CED 201. *A. N. Witt, R. C. Bohlin, T. P. Stecher, and S. M. Graff.* **321**, 912, 134-E1 (1987)
- BOKSENBURG, A. A Detailed Study of the C IV  $\lambda 1550$  Line Profile and Adjacent Spectral Features in NGC 4151 from 1978 to 1983. *J. Clavel, A. Altamore, A. Boksenberg, G. E. Bromage, A. Elvius, D. Pelat, M. V. Penston, G. C. Perola, M. A. J. Snijders, and M. H. Ulrich.* **321**, 251, 125-A5 (1987)
- BOLTE, MICHAEL. The Low-Luminosity X-Ray Sources in Omega Centauri. *Bruce Margon and Michael Bolte.* **321**, L61, 129-F11 (1987)
- BOND, HOWARD E. PG 0122 + 200: A New Member of the GW Virginis (PG 1159 - 035) Class of Extremely Hot Pulsating White Dwarfs. *Howard E. Bond and Albert D. Grauer.* **321**, L123, 137-C1 (1987)
- BOND, J. R. Cosmic Fluctuation Spectra with Large-Scale Power. *J. M. Bardeen, J. R. Bond, and G. Efstathiou.* **321**, 28, 122-D1 (1987)
- BOREIKO, R. T. Ground-based Infrared Observations of Variable IRAS Sources as Candidates for Late Asymptotic Giant Branch Stars. *Sun Kwok, Bruce J. Hrivnak, and R. T. Boreiko.* **321**, 975, 135-B10 (1987)
- BOULANGER, F. Giant Molecular Clouds in M31. *S. N. Vogel, F. Boulanger, and R. Ball.* **321**, L145, 137-D8 (1987)
- BROMAGE, G. E. A Detailed Study of the C IV  $\lambda 1550$  Line Profile and Adjacent Spectral Features in NGC 4151 from 1978 to 1983. *J. Clavel, A. Altamore, A. Boksenberg, G. E. Bromage, A. Elvius, D. Pelat, M. V. Penston, G. C. Perola, M. A. J. Snijders, and M. H. Ulrich.* **321**, 251, 125-A5 (1987)
- BRUNEL, F. Current Loop Coalescence Model of Solar Flares. *T. Tajima, J. Sakai, H. Nakajima, T. Kosugi, F. Brunel, and M. R. Kundu.* **321**, 1031, 135-F10 (1987)
- BURKE, B. F. The Triple Radio Source 0023 + 171: A Candidate for a Dark Gravitational Lens. *J. N. Hewitt, E. L. Turner, C. R. Lawrence, D. P. Schneider, J. E. Gunn, C. L. Bennett, B. F. Burke, J. H. Mahoney, G. I. Langston, M. Schmidt, J. B. Oke, and J. G. Hoessel.* **321**, 706, 132-C5 (1987)
- BUSS, RICHARD H., JR. Extinction and Abundance Properties of Alpha Scorpii Circumstellar Grains. *Theodore P. Snow, Jr., Richard H. Buss, Jr., D. P. Gilra, and J. P. Swings.* **321**, 921, 134-E10 (1987)
- BUSOLETTI, E. Interstellar Amorphous Carbon. *E. Bussoletti, L. Colangeli, and V. Orofino.* **321**, L87, 130-A7 (1987)
- CABRIT, SYLVIE. Forbidden Line and H $\alpha$  Profiles in T Tauri Star Spectra: A Probe of Anisotropic Mass Outflows and Circumstellar Disks. *Suzan Edwards, Sylvie Cabrit, Stephen E. Strom, Ingeborg Heyer, Karen M. Strom, and E. Anderson.* **321**, 473, 127-C10 (1987)
- CANFIELD, RICHARD C. The H $\alpha$  Spectral Counterparts of Solar Hard X-Rays Microflares. *Richard C. Canfield and Thomas R. Metcalf.* **321**, 586, 128-E2 (1987)
- CANTÓ, J. Are the High-Velocity Molecular Flows Really Clumpy? *J. Cantó, L. F. Rodríguez, and G. Anglada.* **321**, 877, 134-B8 (1987)
- CANTÓ, JORGE. Interaction of the High-Density Gas with the Bipolar Outflow in Cepheus A. *José M. Torrelles, Paul T. P. Ho, Luis F. Rodríguez, Jorge Cantó, and James M. Moran.* **321**, 884, 134-C1 (1987)
- CARLSON, BARBARA E. The Role of Aqueous Chemistry in Determining the Composition and Cloud Structure of the Upper Troposphere of Uranus. *Barbara E. Carlson, Michael J. Prather, and William B. Rossow.* **321**, L97, 130-B3 (1987)
- CARR, JOHN S. The 2 Micron Spectrum of L1551 IRS 5. *John S. Carr, P. M. Harvey, and D. F. Lester.* **321**, L71, 129-G7 (1987)
- CASTELAZ, M. W. Airborne Spectrophotometry of Eta Carinae from 4.5 to 7.5 Microns and a Model for Source Morphology. *Ray W. Russell, David K. Lynch, John A. Hackwell, Richard J. Rudy, George S. Rossano, and M. W. Castelaz.* **321**, 937, 134-F12 (1987)
- CASWELL, J. L. Widespread Strong Methanol Masers near H II Regions. *R. P. Norris, J. L. Caswell, F. F. Gardner, and K. J. Wellington.* **321**, L159, 137-E8 (1987)

- CHENG, K. S. Outer Magnetospheric Fluctuations and Pulsar Timing Noise. *K. S. Cheng*. **321**, 799, 133-C6 (1987)
- Could Glitches Inducing Magnetospheric Fluctuations Produce Low-Frequency Pulsar Timing Noise? *K. S. Cheng*. **321**, 805, 133-C13 (1987)
- CHEVALIER, ROGER A. Shocked Relativistic Magnetohydrodynamic Flows with Application to Pulsar Winds. *Robert T. Emmering and Roger A. Chevalier*. **321**, 334, 125-G10 (1987)
- CHU, YOU-HUA. The Composite Image of Sanduleak -69° 202, Candidate Precursor to Supernova 1978A in the Large Magellanic Cloud. *Nolan R. Walborn, Barry M. Lasker, Victoria G. Laidler, and You-Hua Chu*. **321**, L41, 129-E4 (1987)
- CHUPP, E. L. Gamma-Ray Observations of the Crab Region Using a Coded-Aperture Telescope. *M. L. McConnell, P. P. Dunphy, D. J. Forrest, E. L. Chupp, and A. Owens*. **321**, 543, 128-A13 (1987)
- CHURCHWELL, E. Solar System-Sized Condensations in the Orion Nebula. *E. Churchwell, M. Felli, D. O. S. Wood, and M. Massi*. **321**, 516, 127-F11 (1987)
- CIARDULLO, ROBIN. The Morphology of the Rich Supercluster 1451 + 22. *Robin Ciardullo*. **321**, 607, 131-C1 (1987)
- CLAUSSEN, M. J. A Flux-limited Sample of Galactic Carbon Stars (Abstract of Paper in 1987 November Suppl.). *M. J. Claussen, S. G. Kleinmann, R. R. Joyce, and M. Jura*. **321**, 1050, 136-A1 (1987)
- CLAVEL, J. A Detailed Study of the C IV  $\lambda 1550$  Line Profile and Adjacent Spectral Features in NGC 4151 from 1978 to 1983. *J. Clavel, A. Altamore, A. Boksenberg, G. E. Bromage, A. Elvis, D. Pelat, M. V. Penston, G. C. Perola, M. A. J. Snijders, and M. H. Ulrich*. **321**, 251, 125-A5 (1987)
- COHEN, MARTIN. Observations of Jets from Low-Luminosity Stars. II. SVS 12, HH 30, Near HL Tauri, and HH 34. *Martin Cohen and B. F. Jones*. **321**, 846, 133-F13 (1987)
- Optical Spectroscopy of IRAS Sources with Infrared Emission Bands: IRAS 21282 + 5050 and the Diffuse Interstellar Bands. *Martin Cohen and B. F. Jones*. **321**, L151, 137-E1 (1987)
- COLANGELI, L. Interstellar Amorphous Carbon. *E. Bussoletti, L. Colangeli, and V. Orofino*. **321**, L87, 130-A7 (1987)
- COOPERSTEIN, J. Neutrino Pair Energy Deposition in Supernovae. *J. Cooperstein, L. J. von den Horn, and E. Baron*. **321**, L129, 137-C7 (1987)
- CORDES, J. M. Monte Carlo Simulations of Radio Pulsars and Their Progenitors. *R. J. Dewey and J. M. Cordes*. **321**, 780, 133-B1 (1987)
- COWLEY, A. P. CAL 83: A Puzzling X-Ray Source in the Large Magellanic Cloud. *David Crampton, A. P. Cowley, J. B. Hutchings, Paul C. Schmidtke, I. B. Thompson, and James Liebert*. **321**, 745, 132-F3 (1987)
- COWLEY, CHARLES R. Identification of Lines in the Satellite Ultraviolet: The Spectrum of Tau Scorpii. *Charles R. Cowley and Donald R. Merritt*. **321**, 553, 128-B10 (1987)
- CRAMPTON, DAVID. CAL 83: A Puzzling X-Ray Source in the Large Magellanic Cloud. *David Crampton, A. P. Cowley, J. B. Hutchings, Paul C. Schmidtke, I. B. Thompson, and James Liebert*. **321**, 745, 132-F3 (1987)
- CZERNY, BOZENA. Constraints on Quasar Accretion Disks from the Optical/Ultraviolet/Soft X-Ray Big Bump. *Bozena Czerny and Martin Elvis*. **321**, 305, 125-E5 (1987)
- DA COSTA, G. S. The Age of the Large Magellanic Cloud Cluster NGC 2193. *G. S. Da Costa, Christopher R. King, and J. R. Mould*. **321**, 735, 132-E6 (1987)
- DALGARNO, A. The Abundance of  $H_2^+$  Ions in Dense Interstellar Clouds. *S. Lepp, A. Dalgarno, and A. Sternberg*. **321**, 383, 126-D4 (1987)
- DEFREES, D. J. A Detailed Investigation of Proposed Gas-Phase Syntheses of Ammonia in Dense Interstellar Clouds. *Eric Herbst, D. J. DeFrees, and A. D. McLean*. **321**, 898, 134-D1 (1987)
- DEWEY, R. J. Monte Carlo Simulations of Radio Pulsars and Their Progenitors. *R. J. Dewey and J. M. Cordes*. **321**, 780, 133-B1 (1987)
- DJORGOSKI, S. Discovery of a Probable Binary Quasar. *S. Djorgovski, R. Perley, G. Meylan, and P. McCarthy*. **321**, L17, 129-C6 (1987)
- A Correlation between the Radio and Optical Morphologies of Distant 3CR Radio Galaxies. *Patrick J. McCarthy, Wil van Breugel, Hyron Spinrad, and S. Djorgovski*. **321**, L29, 129-D3 (1987)
- DONNELLY, R. HANK. 6 Centimeter Radio Source Counts and Spectral Index Studies Down to 0.1 Millijansky. *R. Hank Donnelly, R. Bruce Partridge, and Rogier A. Windhorst*. **321**, 94, 123-B9 (1987)
- DOWNES, RONALD A. Further Observations of the Peculiar Hot Helium-rich Degenerate KPD 0005 + 5106. *Ronald A. Downes, Edward M. Sion, James Liebert, and J. B. Holberg*. **321**, 943, 134-G4 (1987)
- DRAINE, B. T. Oblique Magnetohydrodynamic Shock Waves in Molecular Clouds. *Mark Wardle and B. T. Draine*. **321**, 321, 125-F8 (1987)
- DUNCAN, D. K. The Activity, Variability, and Rotation of Lower Main-Sequence Hyades Stars. *Richard R. Radick, D. T. Thompson, G. W. Lockwood, D. K. Duncan, and W. E. Baggett*. **321**, 459, 127-B10 (1987)
- DUNPHY, P. P. Gamma-Ray Observations of the Crab Region Using a Coded-Aperture Telescope. *M. L. McConnell, P. P. Dunphy, D. J. Forrest, E. L. Chupp, and A. Owens*. **321**, 543, 128-A13 (1987)
- EDELSON, R. A. Broad-Band Properties of the CFA Seyfert Galaxies. II. Infrared to Millimeter Properties. *R. A. Edelson, M. A. Malkan, and G. H. Rieke*. **321**, 233, 124-G1 (1987)
- EDWARDS, SUZAN. Forbidden Line and H $\alpha$  Profiles in T Tauri Star Spectra: A Probe of Anisotropic Mass Outflows and Circumstellar Disks. *Suzan Edwards, Sylvie Cabrit, Stephen E. Strom, Ingeborg Heyer, Karen M. Strom, and E. Anderson*. **321**, 473, 127-C10 (1987)
- EFTATHIOU, G. Cosmic Fluctuation Spectra with Large-Scale Power. *J. M. Bardeen, J. R. Bond, and G. Efstathiou*. **321**, 28, 122-D1 (1987)
- ELLIS, H. B., JR. Far-Infrared Continuum Emission from the Nucleus, Starburst, and Extended Spiral Arms of NGC 1068. *D. F. Lester, M. Joy, P. M. Harvey, H. B. Ellis, Jr., and P. S. Parmar*. **321**, 755, 132-G1 (1987)
- ELVIS, MARTIN. Constraints on Quasar Accretion Disks from the Optical/Ultraviolet/Soft X-Ray Big Bump. *Bozena Czerny and Martin Elvis*. **321**, 305, 125-E5 (1987)
- Is Optical Fe II Emission Related to the Soft X-Ray Properties of Quasars? *Belinda J. Wilkes, Martin Elvis, and Ian McHardy*. **321**, L23, 129-C12 (1987)
- ELVIUS, A. A Detailed Study of the C IV  $\lambda 1550$  Line Profile and Adjacent Spectral Features in NGC 4151 from 1978 to 1983. *J. Clavel, A. Altamore, A. Boksenberg, G. E. Bromage, A. Elvis, D. Pelat, M. V. Penston, G. C. Perola, M. A. J. Snijders, and M. H. Ulrich*. **321**, 251, 125-A5 (1987)
- EMMERING, ROBERT T. Shocked Relativistic Magnetohydrodynamic Flows with Application to Pulsar Winds. *Robert T. Emmering and Roger A. Chevalier*. **321**, 334, 125-G10 (1987)
- EVJATAR, A. Planetary Fast Neutral Emission and Effects on the Solar Wind: A Cometary Exosphere Analog. Erratum. *D. D. Barbosa and A. Eviatar*. **321**, i049, 135-G14 (1987) (Orig. paper in **310**, 927, 144-B10)
- FANELLI, MICHAEL N. Spectral Synthesis in the Ultraviolet. I. Far-Ultraviolet Stellar Library. *Michael N. Fanelli, Robert W. O'Connell, and Trinh X. Thuan*. **321**, 768, 133-A1 (1987)
- FEJES, ISTVÁN. The Inner Beams of SS 433. *Jonathan D. Romney, Richard T. Schilizzi, István Fejes, and Ralph E. Spencer*. **321**, 822, 133-E3 (1987)
- FELLI, M. Solar System-Sized Condensations in the Orion Nebula. *E. Churchwell, M. Felli, D. O. S. Wood, and M. Massi*. **321**, 516, 127-F11 (1987)
- FIEDLER, R. L. Daily Observations of Compact Extragalactic Radio Sources at 2695 and 8085 MHz, 1979-1985 (Abstract of Paper in 1987 November Suppl.). *R. L. Fiedler, E. B. Waltman, J. H. Spencer, K. J. Johnston, P. E. Angerhofer, D. R. Florkowski, F. J. Jostes, W. J. Klepczynski, D. D. McCarthy, and D. N. Matsakis*. **321**, 1050, 136-A1 (1987)
- FLORKOWSKI, D. R. Daily Observations of Compact Extragalactic Radio Sources at 2695 and 8085 MHz, 1979-1985 (Abstract of Paper in 1987 November Suppl.). *R. L. Fiedler, E. B. Waltman, J. H. Spencer, K. J. Johnston, P. E. Angerhofer, D. R. Florkowski, F. J. Jostes, W. J. Klepczynski, D. D. McCarthy, and D. N. Matsakis*. **321**, 1050, 136-A1 (1987)
- FORREST, D. J. Gamma-Ray Observations of the Crab Region Using a Coded-Aperture Telescope. *M. L. McConnell, P. P. Dunphy, D. J. Forrest, E. L. Chupp, and A. Owens*. **321**, 543, 128-A13 (1987)
- GARDNER, F. F. Widespread Strong Methanol Masers near H II Regions. *R. P. Norris, J. L. Caswell, F. F. Gardner, and K. J. Wellington*. **321**, L159, 137-E8 (1987)
- GENZEL, R. Interpretation of Rotationally Excited Far-Infrared OH Emission in Orion-KL. *G. J. Melnick, R. Genzel, and J. B. Lugten*. **321**, 530, 127-G10 (1987)
- GILRA, D. P. Extinction and Abundance Properties of Alpha Scorpii Circumstellar Grains. *Theodore P. Snow, Jr., Richard H. Buss, Jr., D. P. Gilra, and J. P. Swings*. **321**, 921, 134-E10 (1987)
- GIOVANELLI, RICCARDO. Far-Infrared Properties of Cluster Galaxies. *Michael D. Bicay and Riccardo Giovanelli*. **321**, 645, 131-E11 (1987)
- GIOVANNONI, P. Molecule Formation in Quasar Broad-Line Cloud Gas. *T. Kallman, S. Lepp, and P. Giovannoni*. **321**, 907, 134-D10 (1987)
- GIROUX, MARK L. Cosmological H II Regions and the Photoionization of the Intergalactic Medium. *Paul R. Shapiro and Mark L. Giroux*. **321**, L107, 137-A13 (1987)
- GOLDSMITH, PAUL F. A Survey of IRAS Point Sources in Taurus for High-Velocity Molecular Gas. *Mark H. Heyer, Ronald L. Snell, Paul*

- F. Goldsmith, and Philip C. Myers. **321**, 370, 126-C3 (1987)  
 The Magnetic Evolution of the Taurus Molecular Clouds. I. Large-scale Properties. Mark H. Heyer, Frederick J. Vrba, Ronald L. Snell, F. P. Schloerb, Stephen E. Strom, Paul F. Goldsmith, and Karen M. Strom. **321**, 855, 133-G4 (1987)
- GOTT, J. RICHARD, III. The Topology of Large-Scale Structure. Topology and the Random Phase Hypothesis. David H. Weinberg, J. Richard Gott III, and Adrian L. Melott. **321**, 2, 122-A8 (1987)
- GOUDA, NAOTERU. Small-scale Anisotropies in the Microwave Background in a Baryon-dominated Open Universe. Naoteru Gouda, Misao Sasaki, and Yasushi Suto. **321**, L1, 129-B4 (1987)
- GOULD, ANDREW. Weakly Interacting Massive Particle Distribution in and Evaporation from the Sun. Andrew Gould. **321**, 560, 128-C3 (1987)  
 Resonant Enhancements in Weakly Interacting Massive Particle Capture by the Earth. Andrew Gould. **321**, 571, 128-D1 (1987)
- GRAFF, S. M. The Unusual Dust-scattering Properties in the Reflection Nebula CED 201. A. N. Witt, R. C. Bohlin, T. P. Stecher, and S. M. Graff. **321**, 912, 134-E1 (1987)
- GRAUER, ALBERT D. PG 0122 + 200: A New Member of the GW Virginis (PG 1159 - 035) Class of Extremely Hot Pulsating White Dwarfs. Howard E. Bonú and Albert D. Grauer. **321**, L123, 137-C1 (1987)
- GREENBERG, J. MAYO. Ions in Grain Mantles: The 4.62 Micron Absorption by OCN<sup>-</sup> in W33A. Ruud J. A. Grim and J. Mayo Greenberg. **321**, L91, 130-A11 (1987)
- GREGORY, BROOKE. Two Micron Spectroscopy of IRAS Galaxies. Kimiaki Kawara, Minoru Nishida, and Brooke Gregory. **321**, L35, 129-D12 (1987)
- GRIM, RUUD J. A. Ions in Grain Mantles: The 4.62 Micron Absorption by OCN<sup>-</sup> in W33A. Ruud J. A. Grim and J. Mayo Greenberg. **321**, L91, 130-A11 (1987)
- GUILLLOTEAU, STÉPHANE. The Rich Molecular Spectrum and the Rapid Outflow of OH 231.8 + 4.2. Mark Morris, Stéphane Guilloteau, Robert Lucas, and Alain Omont. **321**, 888, 134-C5 (1987)
- GUNN, J. E. The Triple Radio Source 0023 + 171: A Candidate for a Dark Gravitational Lens. J. N. Hewitt, E. L. Turner, C. R. Lawrence, D. P. Schneider, J. E. Gunn, C. L. Bennett, B. F. Burke, J. H. Mahoney, G. I. Langston, M. Schmidt, J. B. Oke, and J. G. Hoessel. **321**, 706, 132-C5 (1987)
- GUNN, JAMES E. PC 0910 + 5625: An Optically Selected Quasar with a Redshift of 4.04. Maarten Schmidt, Donald P. Schneider, and James E. Gunn. **321**, L7, 129-B10 (1987)
- HACKWELL, JOHN A. Airborne Spectrophotometry of Eta Carinae from 4.5 to 7.5 Microns and a Model for Source Morphology. Ray W. Russell, David K. Lynch, John A. Hackwell, Richard J. Rudy, George S. Rossano, and M. W. Castelaz. **321**, 937, 134-F12 (1987)
- HAMILTON, DONALD. The Host Galaxy of Markarian 231. Donald Hamilton and William C. Keel. **321**, 211, 124-E1 (1987)
- HAMILTON, RUSSELL J. Generation of Plasma Waves by Thick-Target Electron Beams and the Expected Radiation Signature. Russell J. Hamilton and Vahé Petrosian. **321**, 721, 132-D6 (1987)
- HARVEY, P. M. Far-Infrared Continuum Emission from the Nucleus, Starburst, and Extended Spiral Arms of NGC 1068. D. F. Lester, M. Joy, P. M. Harvey, H. B. Ellis, Jr., and P. S. Parmar. **321**, 755, 132-G1 (1987)  
 The 2 Micron Spectrum of L1551 IRS 5. John S. Carr, P. M. Harvey, and D. F. Lester. **321**, L71, 129-G7 (1987)
- HASCHICK, A. D. The Megamaser Galaxy Markarian 273. I. VLA Observations of the Hydroxyl Emission. J. T. Schmelz, W. A. Baan, and A. D. Haschick. **321**, 225, 124-F6 (1987)
- HATZES, ARTIE P. Doppler Images of Rotating Stars Using Maximum Entropy Image Reconstruction. Steven S. Vogt, G. Donald Penrod, and Artie P. Hatzes. **321**, 496, 127-E5 (1987)
- HERBST, ERIC. A Detailed Investigation of Proposed Gas-Phase Syntheses of Ammonia in Dense Interstellar Clouds. Eric Herbst, D. J. DeFrees, and A. D. McLean. **321**, 898, 134-D1 (1987)
- HEWITT, J. N. The Triple Radio Source 0023 + 171: A Candidate for a Dark Gravitational Lens. J. N. Hewitt, E. L. Turner, C. R. Lawrence, D. P. Schneider, J. E. Gunn, C. L. Bennett, B. F. Burke, J. H. Mahoney, G. I. Langston, M. Schmidt, J. B. Oke, and J. G. Hoessel. **321**, 706, 132-C5 (1987)
- HEYER, INGEBORG. Forbidden Line and H $\alpha$  Profiles in T Tauri Star Spectra: A Probe of Anisotropic Mass Outflows and Circumstellar Disks. Suzan Edwards, Sylvie Cabrit, Stephen E. Strom, Ingeborg Heyer, Karen M. Strom, and E. Anderson. **321**, 473, 127-C10 (1987)
- HEYER, MARK H. A Survey of IRAS Point Sources in Taurus for High-Velocity Molecular Gas. Mark H. Heyer, Ronald L. Snell, Paul F. Goldsmith, and Philip C. Myers. **321**, 370, 126-C3 (1987)  
 The Magnetic Evolution of the Taurus Molecular Clouds. I. Large-scale Properties. Mark H. Heyer, Frederick J. Vrba, Ronald L. Snell, F. P. Schloerb, Stephen E. Strom, Paul F. Goldsmith, and Karen M. Strom. **321**, 855, 133-G4 (1987)
- HILLEBRANDT, WOLFGANG. The Production of <sup>26</sup>Al in Supermassive Stars and the Gamma-Ray Line Flux from the Galactic Center. Wolfgang Hillebrandt, Friedrich-Karl Thielemann, and Norbert Langer. **321**, 761, 132-G7 (1987)
- HO, CHENG. Fluctuation of Wind-driven Accretion in X-Ray Binaries. Cheng Ho and Jonathan Arons. **321**, 404, 126-E11 (1987)
- HO, PAUL T. P. Interaction of the High-Density Gas with the Bipolar Outflow in Cepheus A. José M. Torrelles, Paul T. P. Ho, Luis F. Rodríguez, Jorge Cantó, and James M. Moran. **321**, 884, 134-C1 (1987)
- HOESSEL, J. G. The Triple Radio Source 0023 + 171: A Candidate for a Dark Gravitational Lens. J. N. Hewitt, E. L. Turner, C. R. Lawrence, D. P. Schneider, J. E. Gunn, C. L. Bennett, B. F. Burke, J. H. Mahoney, G. I. Langston, M. Schmidt, J. B. Oke, and J. G. Hoessel. **321**, 706, 132-C5 (1987)
- HOLBERG, J. B. Further Observations of the Peculiar Hot Helium-rich Degenerate KPD 0005 + 5106. Ronald A. Downes, Edward M. Sion, James Liebert, and J. B. Holberg. **321**, 943, 134-G4 (1987)
- HOLLIS, J. M. The Large-Scale Radio Structure of R Aquarii. J. M. Hollis, M. Kafatos, A. G. Michalitsianos, R. J. Oliveren, and F. Yusef-Zadeh. **321**, L55, 129-F6 (1987)
- HONEYCUTT, R. KENT. Atlas of Time-resolved Spectrophotometry of Cataclysmic Variables (Abstract of Paper in 1987 November Suppl.). R. Kent Honeycutt, Ronald H. Kaitchuck, and Eric M. Schlegel. **321**, 1052, 136-A3 (1987)
- HOUGH, D. H. Superluminal Motion in the Double-lobed Quasar 3C 245. D. H. Hough and A. C. S. Readhead. **321**, L11, 129-C1 (1987)
- HRIVNAK, BRUCE J. Ground-based Infrared Observations of Variable IRAS Sources as Candidates for Late Asymptotic Giant Branch Stars. Sun Kwok, Bruce J. Hrivnak, and R. T. Boreiko. **321**, 975, 135-B10 (1987)
- HUTCHINGS, J. B. CAL 83: A Puzzling X-Ray Source in the Large Magellanic Cloud. David Crampton, A. P. Cowley, J. B. Hutchings, Paul C. Schmidtke, I. B. Thompson, and James Liebert. **321**, 745, 132-F3 (1987)
- JACOBSON, A. S. Long-Term Gamma-Ray Spectral Variability of Cygnus X-1. J. C. Ling, W. A. Mahoney, Wm. A. Wheaton, and A. S. Jacobson. **321**, L117, 137-B8 (1987)
- JOHNSTON, K. J. Daily Observations of Compact Extragalactic Radio Sources at 2695 and 8085 MHz, 1979-1985 (Abstract of Paper in 1987 November Suppl.). R. L. Fiedler, E. B. Waltman, J. H. Spencer, K. J. Johnston, P. E. Angerhofer, D. R. Florkowski, F. J. Josties, W. J. Klepczynski, D. D. McCarthy, and D. N. Matsakis. **321**, 1050, 136-A1 (1987)
- JONES, B. F. Observations of Jets from Low-Luminosity Stars. II. SVS 12, HH 30, Near HL Tauri, and HH 34. Martin Cohen and B. F. Jones. **321**, 846, 133-F13 (1987)  
 Optical Spectroscopy of IRAS Sources with Infrared Emission Bands: IRAS 21282 + 5050 and the Diffuse Interstellar Bands. Martin Cohen and B. F. Jones. **321**, L151, 137-E1 (1987)
- JOSEPH, CHARLES L. High-Resolution Ultraviolet Observations of Interstellar Lines toward  $\zeta$  Persei Observed with the Balloon-borne Ultraviolet Spectrometer. Theodore P. Snow, H. J. G. L. M. Lamers, and Charles L. Joseph. **321**, 952, 135-A1 (1987)
- JOSTIES, F. J. Daily Observations of Compact Extragalactic Radio Sources at 2695 and 8085 MHz, 1979-1985 (Abstract of Paper in 1987 November Suppl.). R. L. Fiedler, E. B. Waltman, J. H. Spencer, K. J. Johnston, P. E. Angerhofer, D. R. Florkowski, F. J. Josties, W. J. Klepczynski, D. D. McCarthy, and D. N. Matsakis. **321**, 1050, 136-A1 (1987)
- JOY, M. Far-Infrared Continuum Emission from the Nucleus, Starburst, and Extended Spiral Arms of NGC 1068. D. F. Lester, M. Joy, P. M. Harvey, H. B. Ellis, Jr., and P. S. Parmar. **321**, 755, 132-G1 (1987)
- JOYCE, R. R. A Flux-limited Sample of Galactic Carbon Stars (Abstract of Paper in 1987 November Suppl.). M. J. Claussen, S. G. Kleinmann, R. R. Joyce, and M. Jura. **321**, 1050, 136-A1 (1987)
- JURA, M. A Flux-limited Sample of Galactic Carbon Stars (Abstract of Paper in 1987 November Suppl.). M. J. Claussen, S. G. Kleinmann, R. R. Joyce, and M. Jura. **321**, 1050, 136-A1 (1987)
- KAFATOS, M. The Large-Scale Radio Structure of R Aquarii. J. M. Hollis, M. Kafatos, A. G. Michalitsianos, R. J. Oliveren, and F. Yusef-Zadeh. **321**, L55, 129-F6 (1987)
- KAITCHUCK, RONALD H. Atlas of Time-resolved Spectrophotometry of Cataclysmic Variables (Abstract of Paper in 1987 November Suppl.). R. Kent Honeycutt, Ronald H. Kaitchuck, and Eric M. Schlegel. **321**, 1052, 136-A3 (1987)



- KALLMAN, T. Molecule Formation in Quasar Broad-Line Cloud Gas. *T. Kallman, S. Lepp, and P. Giovannoni.* **321**, 907, 134-D10 (1987)
- KAWARA, KIMIaki. Two Micron Spectroscopy of IRAS Galaxies. *Kimiaki Kawara, Minoru Nishida, and Brooke Gregory.* **321**, L35, 129-D12 (1987)
- KEEL, WILLIAM C. The Host Galaxy of Markarian 231. *Donald Hamilton and William C. Keel.* **321**, 211, 124-E1 (1987)
- KEYES, C. D. A Spectroscopic Survey of 51 Planetary Nebulae (Abstract of Paper in 1987 November Suppl.). *L. H. Aller and C. D. Keyes.* **321**, 1051, 136-A2 (1987)
- KING, CHRISTOPHER R. The Age of the Large Magellanic Cloud Cluster NGC 2193. *G. S. Da Costa, Christopher R. King, and J. R. Mould.* **321**, 735, 132-E6 (1987)
- KLEINMANN, S. G. A Flux-limited Sample of Galactic Carbon Stars (Abstract of Paper in 1987 November Suppl.). *M. J. Claussen, S. G. Kleinmann, R. R. Joyce, and M. Jura.* **321**, 1050, 136-A1 (1987)
- KLEPCZYNSKI, W. J. Daily Observations of Compact Extragalactic Radio Sources at 2695 and 8085 MHz, 1979-1985 (Abstract of Paper in 1987 November Suppl.). *R. L. Fiedler, E. B. Waltman, J. H. Spencer, K. J. Johnston, P. E. Angerhofer, D. R. Florkowski, F. J. Josties, W. J. Klepczynski, D. D. McCarthy, and D. N. Matsakis.* **321**, 1050, 136-A1 (1987)
- KOCHANIEK, CHRISTOPHER S. Gravitational Imaging by Isolated Elliptical Potential Wells. I. Cross Sections. *Roger D. Blandford and Christopher S. Kochanek.* **321**, 658, 131-F1 (1987)
- Gravitational Imaging by Isolated Elliptical Potential Wells. II. Probability Distributions. *Christopher S. Kochanek and Roger D. Blandford.* **321**, 676, 132-A3 (1987)
- KOSUGI, T. Current Loop Coalescence Model of Solar Flares. *T. Tajima, J. Sakai, H. Nakajima, T. Kosugi, F. Brunel, and M. R. Kundu.* **321**, 1031, 135-F10 (1987)
- KOVNER, ISRAEL. The Marginal Gravitational Lensing. *Israel Kovner.* **321**, 686, 132-A13 (1987)
- Concerning the Limit on the Mean Mass Distribution of Galaxies from Their Gravitational Lens Effect. *Israel Kovner and Mordehai Milgrom.* **321**, L113, 137-B5 (1987)
- KUNDU, M. R. Simultaneous 2 and 6 Centimeter Wavelength Observations of a Solar Flare Using the VLA. *M. R. Kundu, T. Velusamy, and S. M. White.* **321**, 593, 128-E9 (1987)
- Current Loop Coalescence Model of Solar Flares. *T. Tajima, J. Sakai, H. Nakajima, T. Kosugi, F. Brunel, and M. R. Kundu.* **321**, 1031, 135-F10 (1987)
- KUSUNOSE, MASAaki. Relativistic Thermal Plasmas: Time Development of Electron-Positron Pair Concentration. *Masaaki Kusunose.* **321**, 186, 124-C3 (1987)
- KUTTER, G. SIEGFRIED. Stellar Accretion of Matter Possessing Angular Momentum. *G. Siegfried Kutter and Warren M. Sparks.* **321**, 386, 126-D7 (1987)
- Nuclear Runaways in a C/O White Dwarf Accreting H-rich Material Possessing Angular Momentum. *Warren M. Sparks and G. Siegfried Kutter.* **321**, 394, 126-E1 (1987)
- KWOK, SUN. Ground-based Infrared Observations of Variable IRAS Sources as Candidates for Late Asymptotic Giant Branch Stars. *Sun Kwok, Bruce J. Hrivnak, and R. T. Boreiko.* **321**, 975, 135-B10 (1987)
- LAIDLER, VICTORIA G. The Composite Image of Sanduleak -69° 202, Candidate Precursor to Supernova 1978A in the Large Magellanic Cloud. *Nolan R. Walborn, Barry M. Lasker, Victoria G. Laidler, and You-Hua Chu.* **321**, L41, 129-E4 (1987)
- LAMB, D. Q. Synchronization-induced Period Gaps and Ultra-Short Periods in Magnetic Cataclysmic Binaries. *D. Q. Lamb and Fulvio Melia.* **321**, L133, 137-C11 (1987)
- Dynamical Mass Transfer in Cataclysmic Binaries. *Fulvio Melia and D. Q. Lamb.* **321**, L139, 137-D2 (1987)
- LAMERS, H. J. G. L. M. High-Resolution Ultraviolet Observations of Interstellar Lines toward  $\zeta$  Persei Observed with the Balloon-borne Ultraviolet Spectrometer. *Theodore P. Snow, H. J. G. L. M. Lamers, and Charles L. Joseph.* **321**, 952, 135-A1 (1987)
- LANGER, NORBERT. The Production of  $^{26}\text{Al}$  in Supermassive Stars and the Gamma-Ray Line Flux from the Galactic Center. *Wolfgang Hillebrandt, Friedrich-Karl Thielemann, and Norbert Langer.* **321**, 761, 132-G7 (1987)
- LANGSTON, G. I. The Triple Radio Source 0023 + 171: A Candidate for a Dark Gravitational Lens. *J. N. Hewitt, E. L. Turner, C. R. Lawrence, D. P. Schneider, J. E. Gunn, C. L. Bennett, B. F. Burke, J. H. Mahoney, G. I. Langston, M. Schmidt, J. B. Oke, and J. G. Hoessel.* **321**, 706, 132-C5 (1987)
- LASKER, BARRY M. The Composite Image of Sanduleak -69° 202, Candidate Precursor to Supernova 1978A in the Large Magellanic Cloud. *Nolan R. Walborn, Barry M. Lasker, Victoria G. Laidler, and You-Hua Chu.* **321**, L41, 129-E4 (1987)
- LAWRENCE, C. R. The Triple Radio Source 0023 + 171: A Candidate for a Dark Gravitational Lens. *J. N. Hewitt, E. L. Turner, C. R. Lawrence, D. P. Schneider, J. E. Gunn, C. L. Bennett, B. F. Burke, J. H. Mahoney, G. I. Langston, M. Schmidt, J. B. Oke, and J. G. Hoessel.* **321**, 706, 132-C5 (1987)
- LEPP, S. The Abundance of  $\text{H}^+$  Ions in Dense Interstellar Clouds. *S. Lepp, A. Dalgarno, and A. Sternberg.* **321**, 383, 126-D4 (1987)
- Molecule Formation in Quasar Broad-Line Cloud Gas. *T. Kallman, S. Lepp, and P. Giovannoni.* **321**, 907, 134-D10 (1987)
- LESTER, D. F. Far-Infrared Continuum Emission from the Nucleus, Starburst, and Extended Spiral Arms of NGC 1068. *D. F. Lester, M. Joy, P. M. Harvey, H. B. Ellis, Jr., and P. S. Parmar.* **321**, 755, 132-G1 (1987)
- The 2 Micron Spectrum of L1551 IRS 5. *John S. Carr, P. M. Harvey, and D. F. Lester.* **321**, L71, 129-G7 (1987)
- LEWIN, W. H. G. Multi-peaked X-Ray Bursts from 4U/MXB 1636 - 53: Evidence against Burst-induced Accretion Disk Coronae. *W. Peninix, J. van Paradijs, and W. H. G. Lewin.* **321**, L67, 129-G4 (1987)
- LIEBERT, JAMES. CAL 83: A Puzzling X-Ray Source in the Large Magellanic Cloud. *David Crampton, A. P. Cowley, J. B. Hutchings, Paul C. Schmidtke, J. B. Thompson, and James Liebert.* **321**, 745, 132-F3 (1987)
- Further Observations of the Peculiar Hot Helium-rich Degenerate KPD 0005 + 5106. *Ronald A. Downes, Edward N. Sion, James Liebert, and J. B. Holberg.* **321**, 943, 134-G4 (1987)
- LING, J. C. Long-Term Gamma-Ray Spectral Variability of Cygnus X-1. *J. C. Ling, W. A. Mahoney, Wm. A. Wheaton, and A. S. Jacobson.* **321**, L117, 137-B8 (1987)
- LOCKWOOD, G. W. Spectrophotometry of Epsilon Aurigae. *D. T. Thompson, B. L. Lutz, G. W. Lockwood, and J. R. Sowell.* **321**, 450, 127-B1 (1987)
- The Activity, Variability, and Rotation of Lower Main-Sequence Hyades Stars. *Richard R. Radick, D. T. Thompson, G. W. Lockwood, D. K. Duncan, and W. E. Baggett.* **321**, 459, 127-B10 (1987)
- LUCAS, ROBERT. The Rich Molecular Spectrum and the Rapid Outflow of OH 231.8 + 4.2. *Mark Morris, Stéphane Guilloteau, Robert Lucas, and Alain Omont.* **321**, 888, 134-C5 (1987)
- LUGTEN, J. B. Interpretation of Rotationally Excited Far-Infrared OH Emission in Orion-KL. *G. J. Melnick, R. Genzel, and J. B. Lugten.* **321**, 530, 127-G10 (1987)
- LUTZ, B. L. Spectrophotometry of Epsilon Aurigae. *D. T. Thompson, B. L. Lutz, G. W. Lockwood, and J. R. Sowell.* **321**, 450, 127-B1 (1987)
- LYNCH, DAVID K. Airborne Spectrophotometry of Eta Carinae from 4.5 to 7.5 Microns and a Model for Source Morphology. *Ray W. Russell, David K. Lynch, John A. Hackwell, Richard J. Rudy, George S. Rossano, and M. W. Castelaz.* **321**, 937, 134-F12 (1987)
- MADORE, BARRY F. Distance Moduli and Structure of the Magellanic Clouds from Near-Infrared Photometry of Classical Cepheids. *Douglas L. Welch, Robert A. McLaren, Barry F. Madore, and Christopher W. McAlary.* **321**, 162, 124-A7 (1987)
- MAHONEY, J. H. The Triple Radio Source 0023 + 171: A Candidate for a Dark Gravitational Lens. *J. N. Hewitt, E. L. Turner, C. R. Lawrence, D. P. Schneider, J. E. Gunn, C. L. Bennett, B. F. Burke, J. H. Mahoney, G. I. Langston, M. Schmidt, J. B. Oke, and J. G. Hoessel.* **321**, 706, 132-C5 (1987)
- MAHONEY, W. A. Long-Term Gamma-Ray Spectral Variability of Cygnus X-1. *J. C. Ling, W. A. Mahoney, Wm. A. Wheaton, and A. S. Jacobson.* **321**, L117, 137-B8 (1987)
- MALANEY, ROBERT A. The s-Process Nucleosynthesis of Barium Stars. *Robert A. Malaney.* **321**, 832, 133-E13 (1987)
- MALKAN, M. A. Broad-Band Properties of the CFA Seyfert Galaxies. II. Infrared to Millimeter Properties. *R. A. Edelson, M. A. Malkan, and G. H. Rieke.* **321**, 233, 124-G1 (1987)
- MAMON, GARY A. The Dynamics of Small Groups of Galaxies. I. Virtualized Groups. *Gary A. Mamon.* **321**, 622, 131-D2 (1987)
- MARGON, BRUCE. The Low-Luminosity X-Ray Sources in Omega Centauri. *Bruce Margon and Michael Bolte.* **321**, L61, 129-F11 (1987)
- MASSEY, PHILIP. An Atlas of Optical Spectrophotometry of Wolf-Rayet Carbon and Oxygen Stars (Abstract of Paper in 1987 November Suppl.). *Ana V. Torres and Philip Massey.* **321**, 1053, 136-A4 (1987)
- MASSI, M. Solar System-Sized Condensations in the Orion Nebula. *E. Churchwell, M. Felli, D. O. S. Wood, and M. Massi.* **321**, 516, 127-F11 (1987)
- MATSAKIS, D. N. Daily Observations of Compact Extragalactic Radio Sources at 2695 and 8085 MHz, 1979-1985 (Abstract of Paper in 1987 November Suppl.). *R. L. Fiedler, E. B. Waltman, J. H. Spencer, K. J. Johnston, P. E. Angerhofer, D. R. Florkowski, F. J. Josties, W. J. Klepczynski, D. D. McCarthy, and D. N. Matsakis.* **321**, 1050, 136-A1 (1987)
- MCALARY, CHRISTOPHER W. Distance Moduli and Structure of the

- Magellanic Clouds from Near-Infrared Photometry of Classical Cepheids. Douglas L. Welch, Robert A. McLaren, Barry F. Madore, and Christopher W. McAlary. **321**, 162, 124-A7 (1987)
- MCCARTHY, D. D. Daily Observations of Compact Extragalactic Radio Sources at 2695 and 8085 MHz, 1979-1985 (Abstract of Paper in 1987 November S. suppl.). R. L. Fiedler, E. B. Waltman, J. H. Spencer, K. J. Johnston, P. E. Angerhofer, D. R. Florkowski, F. J. Jostes, W. J. Klepczynski, D. D. McCarthy, and D. N. Matsakis. **321**, 1050, 136-A1 (1987)
- MCCARTHY, P. Discovery of a Probable Binary Quasar. S. Djorgovski, R. Perley, G. Meylan, and P. McCarthy. **321**, L17, 129-C6 (1987)
- MCCARTHY, PATRICK J. A Correlation between the Radio and Optical Morphologies of Distant 3CR Radio Galaxies. Patrick J. McCarthy, Wil van Brugel, Hyron Spinrad, and S. Djorgovski. **321**, L29, 129-D3 (1987)
- MCCONNELL, M. L. Gamma-Ray Observations of the Crab Region Using a Coded-Aperture Telescope. M. L. McConnell, P. P. Dunphy, D. J. Forrest, E. L. Chupp, and A. Owens. **321**, 543, 128-A13 (1987)
- MCHARDY, IAN. Is Optical Fe II Emission Related to the Soft X-Ray Properties of Quasars? Belinda J. Wilkes, Martin Elvis, and Ian McHardy. **321**, L23, 129-C12 (1987)
- MCLAREN, ROBERT A. Distance Moduli and Structure of the Magellanic Clouds from Near-Infrared Photometry of Classical Cepheids. Douglas L. Welch, Robert A. McLaren, Barry F. Madore, and Christopher W. McAlary. **321**, 162, 124-A7 (1987)
- MCLEAN, A. D. A Detailed Investigation of Proposed Gas-Phase Syntheses of Ammonia in Dense Interstellar Clouds. Eric Herbst, D. J. DeFrees, and A. D. McLean. **321**, 898, 134-D1 (1987)
- MELIA, FULVIO. Synchronization-induced Period Gaps and Ultra-Short Periods in Magnetic Cataclysmic Binaries. D. Q. Lamb and Fulvio Melia. **321**, L153, 137-C11 (1987)
- Dynamical Mass Transfer in Cataclysmic Binaries. Fulvio Melia and D. Q. Lamb. **321**, L139, 137-D2 (1987)
- MELNICK, G. J. Interpretation of Rotationally Excited Far-Infrared OH Emission in Orion-KL. G. J. Melnick, R. Genzel, and J. B. Lugten. **321**, 530, 127-G10 (1987)
- MELOTT, ADRIAN L. The Topology of Large-Scale Structure. Topology and the Random Phase Hypothesis. David H. Weinberg, J. Richard Gott III, and Adrian L. Melott. **321**, 2, 122-A8 (1987)
- MERRITT, DONALD R. Identification of Lines in the Satellite Ultraviolet: The Spectrum of Tau Scorpii. Charles R. Cowley and Donald R. Merritt. **321**, 553, 128-B10 (1987)
- METCALF, THOMAS R. The H $\alpha$  Spectral Counterparts of Solar Hard X-Rays Microflares. Richard C. Canfield and Thomas R. Metcalf. **321**, 586, 128-E2 (1987)
- MEYLAN, G. Discovery of a Probable Binary Quasar. S. Djorgovski, R. Perley, G. Meylan, and P. McCarthy. **321**, L17, 129-C6 (1987)
- MICHALITSIANOS, A. G. The Large-Scale Radio Structure of R Aquarii. J. M. Hollis, M. Kafatos, A. G. Michalitsianos, R. J. Oliveren, and F. Yusef-Zadeh. **321**, L55, 129-F6 (1987)
- MICHEL, F. CURTIS. Electromagnetic Jets from Compact Objects. F. Curtis Michel. **321**, 714, 132-C13 (1987)
- MILGROM, MORDEHAI. Concerning the Limit on the Mean Mass Distribution of Galaxies from Their Gravitational Lens Effect. Israel Kovner and Mordehai Milgrom. **321**, L113, 137-B5 (1987)
- MORAN, JAMES M. Interaction of the High-Density Gas with the Bipolar Outflow in Cepheus A. José M. Torrelles, Paul T. P. Ho, Luis F. Rodríguez, Jorge Cantó, and James M. Moran. **321**, 884, 134-C1 (1987)
- MORGAN, WM. LOWELL. Ion-Dipolar Molecule Rate Coefficients: Erratum. Wm. Lowell Morgan and David R. Bates. **321**, 1049, 135-G14 (1987) (Orig. paper in **314**, 817, 38-E3)
- MORRIS, MARK. The Rich Molecular Spectrum and the Rapid Outflow of OH 231.8 + 4.2. Mark Morris, Stéphane Guilloteau, Robert Lucas, and Alain Omont. **321**, 888, 134-C5 (1987)
- MOULD, J. R. The Age of the Large Magellanic Cloud Cluster NGC 2193. G. S. Da Costa, Christopher R. King, and J. R. Mould. **321**, 735, 132-E6 (1987)
- MOULD, JEREMY. The Evolution of Asymptotic Giant Branch Stars in the Magellanic Clouds. III. The Problem of Intermediate-Mass Stars. Jeremy Mould and Neill Reid. **321**, 156, 124-A1 (1987)
- MYERS, PHILIP C. A Survey of IRAS Point Sources in Taurus for High-Velocity Molecular Gas. Mark H. Heyer, Ronald L. Snell, Paul F. Goldsmith, and Philip C. Myers. **321**, 370, 126-C3 (1987)
- NAKAJIMA, H. Current Loop Coalescence Model of Solar Flares. T. Tajima, J. Sakai, H. Nakajima, T. Kosugi, F. Brunel, and M. R. Kundu. **321**, 1031, 135-F10 (1987)
- NERNEY, STEVEN. Radiatively Driven Winds from Magnetic, Fast-rotating Stars: Wolf-Rayet Stars? Steven Nerney and S. T. Suess. **321**, 355, 126-B3 (1987)
- NINKOV, Z. The Primary Orbit and Absorption Lines of HDE 226868 (Cygnus X-1). Z. Ninkov, G. A. H. Walker, and S. Yang. **321**, 425, 126-G4 (1987)
- The He II  $\lambda$ 4686 and H $\alpha$  Emission Lines of Cygnus X-1. Z. Ninkov, G. A. H. Walker, and S. Yang. **321**, 438, 127-A3 (1987)
- NISHIDA, MINORU. Two Micron Spectroscopy of IRAS Galaxies. Kimiaki Kawara, Minoru Nishida, and Brooke Gregory. **321**, L35, 129-D12 (1987)
- NORRIS, R. P. Widespread Strong Methanol Masers near H II Regions. R. P. Norris, J. L. Caswell, F. F. Gardner, and K. J. Wellington. **321**, L159, 137-E8 (1987)
- O'CONNELL, ROBERT W. Spectral Synthesis in the Ultraviolet. I. Far-Ultraviolet Stellar Library. Michael N. Fanelli, Robert W. O'Connell, and Trinh X. Thuan. **321**, 768, 133-A1 (1987)
- OKE, J. B. The Triple Radio Source 0023 + 171: A Candidate for a Dark Gravitational Lens. J. N. Hewitt, E. L. Turner, C. R. Lawrence, D. P. Schneider, J. E. Gunn, C. L. Bennett, B. F. Burke, J. H. Mahoney, G. I. Langston, M. Schmidt, J. E. Oke, and J. G. Hoessel. **321**, 706, 132-C5 (1987)
- OLIVA, E. Forbidden Lines of Si I: An Alternate Interpretation for an Infrared Emission Feature in the Spectrum of SN 1983N (M83). E. Oliva. **321**, L45, 129-E12 (1987)
- OLIVERSEN, R. J. The Large-Scale Radio Structure of R Aquarii. J. M. Hollis, M. Kafatos, A. G. Michalitsianos, R. J. Oliveren, and F. Yusef-Zadeh. **321**, L55, 129-F6 (1987)
- OMONT, ALAIN. The Rich Molecular Spectrum and the Rapid Outflow of OH 231.8 + 4.2. Mark Morris, Stéphane Guilloteau, Robert Lucas, and Alain Omont. **321**, 888, 134-C5 (1987)
- OROFINO, V. Interstellar Amorphous Carbon. E. Bussoletti, L. Colangeli, and V. Orofino. **321**, L87, 130-A7 (1987)
- OWENS, A. Gamma-Ray Observations of the Crab Region Using a Coded-Aperture Telescope. M. L. McConnell, P. P. Dunphy, D. J. Forrest, E. L. Chupp, and A. Owens. **321**, 543, 128-A13 (1987)
- PACINI, F. Optical and X-Ray Radiation from Fast Pulsars: Effects of Duty Cycle and Spectral Shape. F. Pacini and M. Salvati. **321**, 447, 127-A12 (1987)
- PARKER, E. N. Magnetic Monopole Plasma Oscillations and the Survival of Galactic Magnetic Fields. E. N. Parker. **321**, 349, 126-A11 (1987)
- The Dynamical Oscillation and Propulsion of Magnetic Fields in the Convective Zone of a Star. II. Thermal Shadows. E. N. Parker. **321**, 984, 135-C5 (1987)
- The Dynamical Oscillation and Propulsion of Magnetic Fields in the Convective Zone of a Star. III. Accumulation of Heat and the Onset of the Rayleigh-Taylor Instability. E. N. Parker. **321**, 1009, 135-E2 (1987)
- PARMAR, A. N. The Discovery of 7 and 24-28 Hertz Quasi-periodic Oscillations in the X-Ray Flux of GX 17 + 2 (4U 1812 - 14). L. Stella, A. N. Parmar, and N. E. White. **321**, 418, 126-F11 (1987)
- PARMAR, P. S. Far-Infrared Continuum Emission from the Nucleus, Starburst, and Extended Spiral Arms of NGC 1068. D. F. Lester, M. Joy, P. M. Harvey, H. B. Ellis, Jr., and P. S. Parmar. **321**, 755, 132-G1 (1987)
- PARTRIDGE, R. BRUCE. 6 Centimeter Radio Source Counts and Spectral Index Studies Down to 0.1 Millijansky. R. Hank Donnelly, R. Bruce Partridge, and Rogier A. Windhorst. **321**, 94, 123-B9 (1987)
- PELAT, D. A Detailed Study of the C IV  $\lambda$ 1550 Line Profile and Adjacent Spectral Features in NGC 4151 from 1978 to 1983. J. Clavel, A. Altamore, A. Boksenberg, G. E. Bromage, A. Elvius, D. Pelat, M. V. Penston, G. C. Perola, M. A. J. Snijders, and M. H. Ulrich. **321**, 251, 125-A5 (1987)
- PENNINX, W. Multi-peaked X-Ray Bursts from 4U/MXB 1636 - 53: Evidence against Burst-induced Accretion Disk Coronae. W. Penninx, J. van Paradijs, and W. H. G. Lewin. **321**, L67, 129-G4 (1987)
- PENROD, G. DONALD. Doppler Images of Rotating Stars Using Maximum Entropy Image Reconstruction. Steven S. Vogt, G. Donald Penrod, and Artie P. Hatzes. **321**, 496, 127-E5 (1987)
- PENSTON, M. V. A Detailed Study of the C IV  $\lambda$ 1550 Line Profile and Adjacent Spectral Features in NGC 4151 from 1978 to 1983. J. Clavel, A. Altamore, A. Boksenberg, G. E. Bromage, A. Elvius, D. Pelat, M. V. Penston, G. C. Perola, M. A. J. Snijders, and M. H. Ulrich. **321**, 251, 125-A5 (1987)
- PERLEY, R. Discovery of a Probable Binary Quasar. S. Djorgovski, R. Perley, G. Meylan, and P. McCarthy. **321**, L17, 129-C6 (1987)
- PEROLA, G. C. A Detailed Study of the C IV  $\lambda$ 1550 Line Profile and Adjacent Spectral Features in NGC 4151 from 1978 to 1983. J. Clavel, A. Altamore, A. Boksenberg, G. E. Bromage, A. Elvius, D. Pelat, M. V. Penston, G. C. Perola, M. A. J. Snijders, and M. H. Ulrich. **321**, 251, 125-A5 (1987)
- PETROSIAN, VAHE. Generation of Plasma Waves by Thick-Target Electron

- Beams and the Expected Radiation Signature. *Russell J. Hamilton and Vahé Petrosian*. **321**, 721, 132-D6 (1987)
- PRATHER, MICHAEL J. The Role of Aqueous Chemistry in Determining the Composition and Cloud Structure of the Upper Troposphere of Uranus. *Barbara E. Carlson, Michael J. Prather, and William B. Rossow*. **321**, L97, 130-B3 (1987)
- QUINLAN, GERALD D. The Collapse of Dense Star Clusters to Supermassive Black Holes: Binaries and Gravitational Radiation. *Gerald D. Quinlan and Stuart L. Shapiro*. **321**, 199, 124-D2 (1987)
- RADICK, RICHARD R. The Activity, Variability, and Rotation of Lower Main-Sequence Hyades Stars. *Richard R. Radick, D. T. Thompson, G. W. Lockwood, D. K. Duncan, and W. E. Baggett*. **321**, 459, 127-B10 (1987)
- READHEAD, A. C. S. Superluminal Motion in the Double-lobed Quasar 3C 245. *D. H. Hough and A. C. S. Readhead*. **321**, L11, 129-C1 (1987)
- REID, NEILL. The Evolution of Asymptotic Giant Branch Stars in the Magellanic Clouds. III. The Problem of Intermediate-Mass Stars. *Jeremy Mould and Neill Reid*. **321**, 156, 124-A1 (1987)
- RIEKE, G. H. Broad-Band Properties of the CIA Seyfert Galaxies. II. Infrared to Millimeter Properties. *R. A. Edelson, M. A. Malkan, and G. H. Rieke*. **321**, 233, 124-G1 (1987)
- ROBINSON, EDWARD L. The Eclipses of Cataclysmic Variables. II. U Gem. *E.-H. Zhang and Edward L. Robinson*. **321**, 813, 133-D8 (1987)
- RODRIGUEZ, L. F. Are the High-Velocity Molecular Flows Really Clumpy? *J. Cantó, L. F. Rodríguez, and G. Anglada*. **321**, 877, 134-B8 (1987)
- RODRIGUEZ, LUIS F. Interaction of the High-Density Gas with the Bipolar Outflow in Cepheus A. *José M. Torrelles, Paul T. P. Ho, Luis F. Rodríguez, Jorge Cantó, and James M. Moran*. **321**, 884, 134-C1 (1987)
- ROMNEY, JONATHAN D. The Inner Beams of SS 433. *Jonathan D. Romney, Richard T. Schilizzi, István Fejes, and Ralph E. Spencer*. **321**, 822, 133-E3 (1987)
- ROSSANO, GEORGE S. Airborne Spectrophotometry of Eta Carinae from 4.5 to 7.5 Microns and a Model for Source Morphology. *Ray W. Russell, David K. Lynch, John A. Hackwell, Richard J. Rudy, George S. Rossano, and M. W. Castelaz*. **321**, 937, 134-F12 (1987)
- ROSSOW, WILLIAM B. The Role of Aqueous Chemistry in Determining the Composition and Cloud Structure of the Upper Troposphere of Uranus. *Barbara E. Carlson, Michael J. Prather, and William B. Rossow*. **321**, L97, 130-B3 (1987)
- RUDY, RICHARD J. Airborne Spectrophotometry of Eta Carinae from 4.5 to 7.5 Microns and a Model for Source Morphology. *Ray W. Russell, David K. Lynch, John A. Hackwell, Richard J. Rudy, George S. Rossano, and M. W. Castelaz*. **321**, 937, 134-F12 (1987)
- RUSSELL, RAY W. Airborne Spectrophotometry of Eta Carinae from 4.5 to 7.5 Microns and a Model for Source Morphology. *Ray W. Russell, David K. Lynch, John A. Hackwell, Richard J. Rudy, George S. Rossano, and M. W. Castelaz*. **321**, 937, 134-F12 (1987)
- SAGE, LESLIE J. The Extraordinary CO Luminosity of the Far-Infrared Galaxy VII Zw 31: A Possible Proto-Galactic Disk? *Leslie J. Sage and P. M. Solomon*. **321**, L103, 137-A9 (1987)
- SAKAI, J. Current Loop Coalescence Model of Solar Flares. *T. Tajima, J. Sakai, H. Nakajima, T. Kosugi, F. Brunel, and M. R. Kundu*. **321**, 1031, 135-F10 (1987)
- SALVATI, M. Optical and X-Ray Radiation from Fast Pulsars: Effects of Duty Cycle and Spectral Shape. *F. Pacini and M. Salvati*. **321**, 447, 127-A12 (1987)
- SASAKI, MISAO. Small-scale Anisotropies in the Microwave Background in a Baryon-dominated Open Universe. *Naoteru Gouda, Misao Sasaki, and Yasushi Suto*. **321**, L1, 129-B4 (1987)
- SCHILIZZI, RICHARD T. The Inner Beams of SS 433. *Jonathan D. Romney, Richard T. Schilizzi, István Fejes, and Ralph E. Spencer*. **321**, 822, 133-E3 (1987)
- SCHLEGEL, ERIC M. Atlas of Time-resolved Spectrophotometry of Cataclysmic Variables (Abstract of Paper in 1987 November Suppl.). *R. Kent Honeycutt, Ronald H. Kaitchuck, and Eric M. Schlegel*. **321**, 1052, 136-A3 (1987)
- SCHLOERB, F. P. The Magnetic Evolution of the Taurus Molecular Clouds. I. Large-scale Properties. *Mark H. Heyer, Frederick J. Vrba, Ronald L. Snell, F. P. Schloerb, Stephen E. Strom, Paul F. Goldsmith, and Karen M. Strom*. **321**, 855, 133-G4 (1987)
- SCHMELZ, J. T. The Megamaser Galaxy Markarian 273. I. VLA Observations of the Hydroxyl Emission. *J. T. Schmelz, W. A. Baan, and A. D. Haschick*. **321**, 225, 124-F6 (1987)
- SCHMIDT, M. The Triple Radio Source 0023 + 171: A Candidate for a Dark Gravitational Lens. *J. N. Hewitt, E. L. Turner, C. R. Lawrence, D. P. Schneider, J. E. Gunn, C. L. Bennett, B. F. Burke, J. H. Mahoney, G. I. Langston, M. Schmidt, J. B. Oke, and J. G. Hoessel*. **321**, 706, 132-C5 (1987)
- SCHMIDT, MAARTEN. PC 0910 + 5625: An Optically Selected Quasar with a Redshift of 4.04. *Maarten Schmidt, Donald P. Schneider, and James E. Gunn*. **321**, L7, 129-B10 (1987)
- SCHMIDTKE, PAUL C. CAL 83: A Puzzling X-Ray Source in the Large Magellanic Cloud. *David Crampton, A. P. Cowley, J. B. Hutchings, Paul C. Schmidtke, I. B. Thompson, and James Liebert*. **321**, 745, 132-F3 (1987)
- SCHNEIDER, D. P. The Triple Radio Source 0023 + 171: A Candidate for a Dark Gravitational Lens. *J. N. Hewitt, E. L. Turner, C. R. Lawrence, D. P. Schneider, J. E. Gunn, C. L. Bennett, B. F. Burke, J. H. Mahoney, G. I. Langston, M. Schmidt, J. B. Oke, and J. G. Hoessel*. **321**, 706, 132-C5 (1987)
- SCHNEIDER, DONALD P. PC 0910 + 5625: An Optically Selected Quasar with a Redshift of 4.04. *Maarten Schmidt, Donald P. Schneider, and James E. Gunn*. **321**, L7, 129-B10 (1987)
- SHAPIRO, PAUL R. Cosmological H II Regions and the Photoionization of the Intergalactic Medium. *Paul R. Shapiro and Mark L. Giroux*. **321**, L107, 137-A13 (1987)
- SHAPIRO, STUART L. The Collapse of Dense Star Clusters to Supermassive Black Holes: Binaries and Gravitational Radiation. *Gerald D. Quinlan and Stuart L. Shapiro*. **321**, 199, 124-D2 (1987)
- SHAVIV, GIORA. The Effect of Heating from the Boundary Layer on Accretion Models for Novae and Other Compact Objects. *Giora Shaviv and Sumner Starrfield*. **321**, L51, 129-F3 (1987)
- SION, EDWARD M. Further Observations of the Peculiar Hot Helium-rich Degenerate KPD 0005 + 5106. *Ronald A. Downes, Edward M. Sion, James Liebert, and J. B. Holberg*. **321**, 943, 134-G4 (1987)
- SMEYERS, P. Asymptotic Approximations for Higher Order Nonradial Oscillations of a Spherically Symmetric Star (Abstract of Paper in 1987 November Suppl.). *P. Smeyers and M. Tassoul*. **321**, 1051, 136-A2 (1987)
- SNELL, RONALD L. A Survey of IRAS Point Sources in Taurus for High-Velocity Molecular Gas. *Mark H. Heyer, Ronald L. Snell, Paul F. Goldsmith, and Philip C. Myers*. **321**, 370, 126-C3 (1987)
- The Magnetic Evolution of the Taurus Molecular Clouds. I. Large-scale Properties. *Mark H. Heyer, Frederick J. Vrba, Ronald L. Snell, F. P. Schloerb, Stephen E. Strom, Paul F. Goldsmith, and Karen M. Strom*. **321**, 855, 133-G4 (1987)
- SNIJDERS, M. A. J. A Detailed Study of the C IV  $\lambda 1550$  Line Profile and Adjacent Spectral Features in NGC 4151 from 1978 to 1983. *J. Clavel, A. Altamore, A. Boksenberg, G. E. Bromage, A. Elvius, D. Pelat, M. V. Penston, G. C. Perola, M. A. J. Snijders, and M. H. Ulrich*. **321**, 251, 125-A5 (1987)
- SNOW, THEODORE P. High-Resolution Ultraviolet Observations of Interstellar Lines toward  $\zeta$  Persei Observed with the Balloon-borne Ultraviolet Spectrometer. *Theodore P. Snow, H. J. G. L. M. Lamers, and Charles L. Joseph*. **321**, 952, 135-A1 (1987)
- SNOW, THEODORE P., JR. Extinction and Abundance Properties of Alpha Scorpii Circumstellar Grains. *Theodore P. Snow, Jr., Richard H. Buss, Jr., D. P. Gilra, and J. P. Swings*. **321**, 921, 134-E10 (1987)
- SOLOMON, P. M. The Extraordinary CO Luminosity of the Far-Infrared Galaxy VII Zw 31: A Possible Proto-Galactic Disk? *Leslie J. Sage and P. M. Solomon*. **321**, L103, 137-A9 (1987)
- SOWELL, J. R. Spectrophotometry of Epsilon Aurigae. *D. T. Thompson, B. L. Lutz, G. W. Lockwood, and J. R. Sowell*. **321**, 450, 127-B1 (1987)
- SPARKS, WARREN M. Stellar Accretion of Matter Possessing Angular Momentum. *G. Siegfried Kutter and Warren M. Sparks*. **321**, 386, 126-D7 (1987)
- Nuclear Runaways in a C/O White Dwarf Accreting H-rich Material Possessing Angular Momentum. *Warren M. Sparks and G. Siegfried Kutter*. **321**, 394, 126-E1 (1987)
- SPENCER, J. H. Daily Observations of Compact Extragalactic Radio Sources at 2695 and 8085 MHz, 1979-1985 (Abstract of Paper in 1987 November Suppl.). *R. L. Fiedler, E. B. Waltman, J. H. Spencer, K. J. Johnston, P. E. Angerhofer, D. R. Florkowski, F. J. Josties, W. J. Klepczynski, D. D. McCarthy, and D. N. Matsakis*. **321**, 1050, 136-A1 (1987)
- SPENCER, RALPH E. The Inner Beams of SS 433. *Jonathan D. Romney, Richard T. Schilizzi, István Fejes, and Ralph E. Spencer*. **321**, 822, 133-E3 (1987)
- SPINRAD, HYRON. A Correlation between the Radio and Optical Morphologies of Distant 3CR Radio Galaxies. *Patrick J. McCarthy, Wil van Breugel, Hyron Spinrad, and S. Djorgovski*. **321**, L29, 129-D3 (1987)
- STARRFIELD, SUMNER. The Effect of Heating from the Boundary Layer on



- Accretion Models for Novae and Other Compact Objects. *Giora Shaviv and Sumner Starrfield*. **321**, L51, 129-F3 (1987)
- STATLER, THOMAS S. Self-consistent Models of Perfect Triaxial Galaxies. *Thomas S. Statler*. **321**, 113, 123-D1 (1987)
- STECHER, T. P. The Unusual Dust-scattering Properties in the Reflection Nebula CED 201. *A. N. Witt, R. C. Bohlin, T. P. Stecher, and S. M. Graff*. **321**, 912, 134-E1 (1987)
- STELLA, L. The Discovery of 7 and 24–28 Hertz Quasi-periodic Oscillations in the X-Ray Flux of GX 17 + 2 (4U 1812 – 14). *L. Stella, A. N. Parmar, and N. E. White*. **321**, 418, 126-F11 (1987)
- STERNBERG, A. The Abundance of  $H_2^+$  Ions in Dense Interstellar Clouds. *S. Lepp, A. Dalgarno, and A. Sternberg*. **321**, 383, 126-D4 (1987)
- STROM, KAREN M. Forbidden Line and H $\alpha$  Profiles in T Tauri Star Spectra: A Probe of Anisotropic Mass Outflows and Circumstellar Disks. *Suzan Edwards, Sylvie Cabrit, Stephen E. Strom, Ingeborg Heyer, Karen M. Strom, and E. Anderson*. **321**, 473, 127-C10 (1987)
- The Magnetic Evolution of the Taurus Molecular Clouds. I. Large-scale Properties. *Mark H. Heyer, Frederick J. Vrba, Ronald L. Snell, F. P. Schloerb, Stephen E. Strom, Paul F. Goldsmith, and Karen M. Strom*. **321**, 855, 133-G4 (1987)
- STROM, STEPHEN E. Forbidden Line and H $\alpha$  Profiles in T Tauri Star Spectra: A Probe of Anisotropic Mass Outflows and Circumstellar Disks. *Suzan Edwards, Sylvie Cabrit, Stephen E. Strom, Ingeborg Heyer, Karen M. Strom, and E. Anderson*. **321**, 473, 127-C10 (1987)
- The Magnetic Evolution of the Taurus Molecular Clouds. I. Large-scale Properties. *Mark H. Heyer, Frederick J. Vrba, Ronald L. Snell, F. P. Schloerb, Stephen E. Strom, Paul F. Goldsmith, and Karen M. Strom*. **321**, 855, 133-G4 (1987)
- SUESS, S. T. Radiatively Driven Winds from Magnetic, Fast-rotating Stars: Wolf-Rayet Stars? *Steven Nerney and S. T. Suess*. **321**, 355, 126-B3 (1987)
- SUTO, YASUSHI. Correlation Function in Decaying Particle Cosmology. *Yasushi Suto*. **321**, 36, 122-D12 (1987)
- Small-scale Anisotropies in the Microwave Background in a Baryon-dominated Open Universe. *Naoeru Gouda, Misao Sasaki, and Yasushi Suto*. **321**, L1, 129-B4 (1987)
- SWINGS, J. P. Extinction and Abundance Properties of Alpha Scorpii Circumstellar Grains. *Theodore P. Snow, Jr., Richard H. Buss, Jr., D. P. Gilra, and J. P. Swings*. **321**, 921, 134-E10 (1987)
- TAJIMA, T. Current Loop Coalescence Model of Solar Flares. *T. Tajima, J. Sakai, H. Nakajima, T. Kosugi, F. Brunel, and M. R. Kundu*. **321**, 1031, 135-F10 (1987)
- TASSOUL, M. Asymptotic Approximations for Higher Order Nonradial Oscillations of a Spherically Symmetric Star (Abstract of Paper in 1987 November Suppl.). *P. Smeyers and M. Tassoul*. **321**, 1051, 136-A2 (1987)
- THIELEMAN, FRIEDRICH-KARL. The Production of  $^{26}\text{Al}$  in Supermassive Stars and the Gamma-Ray Line Flux from the Galactic Center. *Wolfgang Hillebrandt, Friedrich-Karl Thieleman, and Norbert Langner*. **321**, 761, 132-G7 (1987)
- THOMPSON, D. T. Spectrophotometry of Epsilon Aurigae. *D. T. Thompson, B. L. Lutz, G. W. Lockwood, and J. R. Sowell*. **321**, 450, 127-B1 (1987)
- The Activity, Variability, and Rotation of Lower Main-Sequence Hyades Stars. *Richard R. Radick, D. T. Thompson, G. W. Lockwood, D. K. Duncan, and W. E. Baggett*. **321**, 459, 127-B10 (1987)
- THOMPSON, I. B. CAL 83: A Puzzling X-Ray Source in the Large Magellanic Cloud. *David Crampton, A. P. Cowley, J. B. Hutchings, Paul C. Schmidtke, I. B. Thompson, and James Liebert*. **321**, 745, 132-F3 (1987)
- THOMPSON, RODGER I. A New Ionization Model for Galaxies with Dominant Star-Formation Regions. *Rodger I. Thompson*. **321**, 153, 123-G11 (1987)
- THUAN, TRINH X. Spectral Synthesis in the Ultraviolet. I. Far-Ultraviolet Stellar Library. *Michael N. Fanelli, Robert W. O'Connell, and Trinh X. Thuan*. **321**, 768, 133-A1 (1987)
- TORRELLES, JOSÉ M. Interaction of the High-Density Gas with the Bipolar Outflow in Cepheus A. *José M. Torrelles, Paul T. P. Ho, Luis F. Rodríguez, Jorge Cantó, and James M. Moran*. **321**, 884, 134-C1 (1987)
- TORRES, ANA V. An Atlas of Optical Spectrophotometry of Wolf-Rayet Carbon and Oxygen Stars (Abstract of Paper in 1987 November Suppl.). *Ana V. Torres and Philip Massey*. **321**, 1053, 136-A4 (1987)
- TULLY, R. BRENT. Nearby Groups of Galaxies. II. An All-Sky Survey within 3000 Kilometers per Second. *R. Brent Tully*. **321**, 280, 125-C7 (1987)
- TURNER, B. E. Detection of Interstellar PN: The First Identified Phosphorus Compound in the Interstellar Medium. *B. E. Turner and John Bally*. **321**, L75, 129-G11 (1987)
- TURNER, E. L. The Triple Radio Source 0023 + 171: A Candidate for a Dark Gravitational Lens. *J. N. Hewitt, E. L. Turner, C. R. Lawrence, D. P. Schneider, J. E. Gunn, C. L. Bennett, B. F. Burke, J. H. Mahoney, G. I. Langston, M. Schmidt, J. B. Oke, and J. G. Hoessel*. **321**, 706, 132-C5 (1987)
- TYTLER, DAVID. The Distribution of QSO Absorption System Column Densities: Evidence for a Single Population. *David Tytler*. **321**, 49, 122-F6 (1987)
- The Redshift Distribution of QSO Lyman-Alpha Absorption Systems. *David Tytler*. **321**, 69, 122-G12 (1987)
- ULRICH, M. H. A Detailed Study of the C IV  $\lambda 1550$  Line Profile and Adjacent Spectral Features in NGC 4151 from 1978 to 1983. *J. Clavel, A. Altamore, A. Boksenberg, G. E. Bromage, A. Elios, D. Pelat, M. V. Penston, G. C. Perola, M. A. J. Snijders, and M. H. Ulrich*. **321**, 251, 125-A5 (1987)
- VAN BREUGEL, WIL. A Correlation between the Radio and Optical Morphologies of Distant 3CR Radio Galaxies. *Patrick J. McCarthy, Wil van Breugel, Hyron Spinrad, and S. Djorgovski*. **321**, L29, 129-D3 (1987)
- VAN DEN HORN, L. J. Neutrino Pair Energy Deposition in Supernovae. *J. Cooperstein, L. J. van den Horn, and E. Baron*. **321**, L129, 137-C7 (1987)
- VAN PARADIJS, J. Multi-peaked X-Ray Bursts from 4U/MXB 1636 – 53: Evidence against Burst-induced Accretion Disk Coronae. *W. Penninx, J. van Paradijs, and W. H. G. Lewin*. **321**, L67, 129-G4 (1987)
- VELUSAMY, T. Simultaneous 2 and 6 Centimeter Wavelength Observations of a Solar Flare Using the VLA. *M. R. Kundu, T. Velusamy, and S. M. White*. **321**, 593, 128-E9 (1987)
- VILHU, OSMI. Chromospheric-Coronal Activity at Saturated Levels. *Osmi Vilhu and Frederick M. Walter*. **321**, 958, 135-A7 (1987)
- VOGEL, S. N. Giant Molecular Clouds in M31. *S. N. Vogel, F. Boulanger, and R. Ball*. **321**, L145, 137-D8 (1987)
- VOGT, STEVEN S. Doppler Images of Rotating Stars Using Maximum Entropy Image Reconstruction. *Steven S. Votg, G. Donald Penrod, and Artie P. Hatzes*. **321**, 496, 127-E5 (1987)
- VRBA, FREDERICK J. The Magnetic Evolution of the Taurus Molecular Clouds. I. Large-scale Properties. *Mark H. Heyer, Frederick J. Vrba, Ronald L. Snell, F. P. Schloerb, Stephen E. Strom, Paul F. Goldsmith, and Karen M. Strom*. **321**, 855, 133-G4 (1987)
- WALBORN, NOLAN R. The Composite Image of Sanduleak – 69° 202, Candidate Precursor to Supernova 1978A in the Large Magellanic Cloud. *Nolan R. Walborn, Barry M. Lasker, Victoria G. Laidler, and You-Hua Chu*. **321**, L41, 129-E4 (1987)
- WALKER, G. A. H. The Primary Orbit and Absorption Lines of HDE 226868 (Cygnus X-1). *Z. Ninkov, G. A. H. Walker, and S. Yang*. **321**, 425, 126-G4 (1987)
- The He II  $\lambda 4686$  and H $\alpha$  Emission Lines of Cygnus X-1. *Z. Ninkov, G. A. H. Walker, and S. Yang*. **321**, 438, 127-A3 (1987)
- WALTER, FREDERICK M. Chromospheric-Coronal Activity at Saturated Levels. *Osmi Vilhu and Frederick M. Walter*. **321**, 958, 135-A7 (1987)
- WALTMAN, E. B. Daily Observations of Compact Extragalactic Radio Sources at 2695 and 8085 MHz, 1979–1985 (Abstract of Paper in 1987 November Suppl.). *R. L. Fiedler, E. B. Waltman, J. H. Spencer, K. J. Johnston, P. E. Angerhofer, D. R. Florkowski, F. J. Josties, W. J. Klepczynski, D. D. McCarthy, and D. N. Matsakis*. **321**, 1050, 136-A1 (1987)
- WARDLE, MARK. Oblique Magnetohydrodynamic Shock Waves in Molecular Clouds. *Mark Wardle and B. T. Draine*. **321**, 321, 125-F8 (1987)
- WEBB, G. M. Relativistic Transport Theory for Cosmic Rays: Erratum. *G. M. Webb*. **321**, 606, 128-G2 (1987) (Orig. paper in **296**, 319, 93-D7)
- WEINBERG, DAVID H. The Topology of Large-Scale Structure. Topology and the Random Phase Hypothesis. *David H. Weinberg, J. Richard Gott III, and Adrian L. Melott*. **321**, 2, 122-A8 (1987)
- WELCH, DOUGLAS L. Distance Moduli and Structure of the Magellanic Clouds from Near-Infrared Photometry of Classical Cepheids. *Douglas L. Welch, Robert A. McLaren, Barry F. Madore, and Christopher W. McAlary*. **321**, 162, 124-A7 (1987)
- WELLINGTON, K. J. Widespread Strong Methanol Masers near H II Regions. *R. P. Norris, J. L. Caswell, F. F. Gardner, and K. J. Wellington*. **321**, L159, 137-E8 (1987)
- WHEATON, WM. A. Long-Term Gamma-Ray Spectral Variability of Cygnus X-1. *J. C. Ling, W. A. Mahoney, Wm. A. Wheaton, and A. S. Jacobson*. **321**, L117, 137-B8 (1987)
- WHITE, N. E. The Discovery of 7 and 24–28 Hertz Quasi-periodic Oscillations in the X-Ray Flux of GX 17 + 2 (4U 1812 – 14). *L. Stella, A. N. Parmar, and N. E. White*. **321**, 418, 126-F11 (1987)

- WHITE, S. M. Simultaneous 2 and 6 Centimeter Wavelength Observations of a Solar Flare Using the VLA. *M. R. Kundu, T. Velusamy, and S. M. White.* **321**, 593, 128-E9 (1987)
- WILKES, BELINDA J. Is Optical Fe II Emission Related to the Soft X-Ray Properties of Quasars? *Belinda J. Wilkes, Martin Elvis, and Ian McHardy.* **321**, L23, 129-C12 (1987)
- WINDHORST, ROGIER A. 6 Centimeter Radio Source Counts and Spectral Index Studies Down to 0.1 Millijansky. *R. Hank Donnelly, R. Bruce Partridge, and Rogier A. Windhorst.* **321**, 94, 123-B9 (1987)
- WITT, A. N. The Unusual Dust-scattering Properties in the Reflection Nebula CED 201. *A. N. Witt, R. C. Bohlin, T. P. Stecher, and S. M. Graff.* **321**, 912, 134-E1 (1987)
- WOOD, D. O. S. Solar System-Sized Condensations in the Orion Nebula. *E. Churchwell, M. Felli, D. O. S. Wood, and M. Massi.* **321**, 516, 127-F11 (1987)
- YANG, S. The Primary Orbit and Absorption Lines of HDE 226868 (Cygnus X-1). *Z. Ninkov, G. A. H. Walker, and S. Yang.* **321**, 425, 126-G4 (1987)
- The He II  $\lambda 4686$  and H $\alpha$  Emission Lines of Cygnus X-1. *Z. Ninkov, G. A. H. Walker, and S. Yang.* **321**, 438, 127-A3 (1987)
- YUSEF-ZADEH, F. The Large-Scale Radio Structure of R Aquarii. *J. M. Hollis, M. Kafatos, A. G. Michalitsianos, R. J. Oliveren, and F. Yusef-Zadeh.* **321**, L55, 129-F6 (1987)
- ZHANG, E.-H. The Eclipses of Cataclysmic Variables. II. U Geminorum. *E.-H. Zhang and Edward L. Robinson.* **321**, 813, 133-D8 (1987)
- ZIURYS, L. M. Detection of Interstellar PN: The First Phosphorus-bearing Species Observed in Molecular Clouds. *L. M. Ziurys.* **321**, L81, 130-A2 (1987)



